NOTICE

All drawings located at the end of the document.

AR

Draft Buffer Zone Sampling and Analysis Plan FY04 Addendum #BZ-04-01 IHSS Group 900-11

October 2003

Draft Buffer Zone
Sampling and Analysis Plan
FY04 Addendum #BZ-04-01
IHSS Group 900-11

Approval received from the Colorado Department of Public Health and Environment.
( )
Approval letter contained in the Administrative Record.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

3

ACRONYMS

AOC	area of concern
BZ	Buffer Zone
BZSAP	Buffer Zone Sampling and Analysis Plan
DOE	U.S. Department of Energy
EPA	U.S. Environmental Protection Agency
FY	Fiscal Year
HRR	Historical Release Report
IA	Industrial Area
IASAP	Industrial Area Sampling and Analysis Plan
IHSS	Individual Hazardous Substance Site
K-H	Kaiser-Hill Company, LLC
mg/kg	milligrams per kilogram
N/A	not applicable
OU	Operable Unit
PAC	Potential Area of Concern
pCi/g	picocuries per gram
PCOC	potential contaminant of concern
RFCA	Rocky Flats Cleanup Agreement
RFI/RI	RCRA Facility Investigation/Remedial Investigation
SAP	Sampling and Analysis Plan

1.0 INTRODUCTION

This Buffer Zone (BZ) Sampling and Analysis Plan (SAP) (BZSAP) (DOE 2001) Addendum #BZ-04-01 includes Individual Hazardous Substance Site (IHSS) Group-specific information, sampling locations, and potential contaminants of concern (PCOCs) for an IHSS Group proposed for characterization during Fiscal Year (FY) 04. This BZSAP Addendum is a supplement to the BZSAP (DOE 2001) and includes data and proposed sampling locations for IHSS Group 900-11. IHSS Group 900-11 consists of the following IHSS sites and Potential Areas of Concern (PACs):

- IHSS 112 – Pad Drum Storage Area
- IHSS 155 – 903 Pad Lip Area
- IHSS 140 – Hazardous Disposal Area (Reactive Metal Destruction Site)
- IHSS 183 – Gas Detoxification Area
- SE-1602 – East Firing Range
- NE-1412 – Trench T-12 (East Trenches)
- NE-1413 – Trench T-13 (East Trenches)

2.0 IHSS GROUP 900-11

The 903 Lip Area (Individual Hazardous Substance Site [IHSS] 155) is primarily an area east and south of the 903 Pad where wind and rain spread plutonium-contaminated soils from the 903 pad area. The locations of the IHSSs and PACs that may be impacted during characterization are shown on Figure 1.

Several limited excavations have removed some of the contaminated soils from the lip area. However, results from the OU2 Phase II RFI/RI sampling and analysis and the *Site Characterization Report for the 903 Drum Storage Area, 903 Lip Area, and the Americium Zone* (KH, July 2002) confirm that radiological-contaminated soils remain. The contamination is primarily attributed to wind dispersion from the 903 Pad and stormwater related surface soil erosion.

The PCOCs for IHSS Group 900-11 and surrounding area are listed in Table 1. Proposed new sampling locations are the starting point for IHSS Group characterization. After characterization starts, the number and type of samples may change based on sampling results. Changes to sampling specifications will be considered in consultation with the regulatory agencies.

Table 1
IHSS Group 900-11 and Surrounding Area PCOCs

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Data Source	Sampling Location Method
900-11	IHSS 112	Radionuclides	Surface Soil	HRR (DOE 1992-2002) Process Knowledge (IASAP [DOE 2001])	Composited Grab

5

IHSS Group	IHSS/PAC/UBC Site	PCOCs	Media	Data Source	Sampling Location Method
	IHSS 155	Radionuclides	Surface Soil	HRR (DOE 1992-2002) Process Knowledge (IASAP [DOE 2001])	Composited Grab
	IHSS 140	Radionuclides	Surface Soil	HRR (DOE 1992-2002) Process Knowledge (IASAP [DOE 2001])	Composited Grab
	IHSS 183	Radionuclides	Surface Soil	HRR (DOE 1992-2002) Process Knowledge (IASAP [DOE 2001])	Composited Grab
	SE-1602	Radionuclides	Surface Soil	HRR (DOE 1992-2002) Process Knowledge (IASAP [DOE 2001])	Composited Grab
NE/NW	NE-1412	Radionuclides	Surface Soil	HRR (DOE 1992-2002) Process Knowledge (IASAP [DOE 2001])	Composited Grab
NE/NW	NE-1413	Radionuclides	Surface Soil	HRR (DOE 1992-2002) Process Knowledge (IASAP [DOE 2001])	Composited Grab

2.1 Existing Characterization Information

Existing information and data for these IHSSs are available in Appendix C of the IASAP (DOE 2001), and the Historical Release Reports (HRRs) (DOE 1992-2002).

Existing gamma spcectroscopy data associated with IHSS 155 plutonium-239/240 activities is presented on Figure 2. This data represents the starting point for determining which grid cells will need further sampling.

2.2 Sampling

Analogous to the 903 Pad remediation, a grid approach will be utilitzed. Grid sizes for the project will be based on the geostatistical methods presented in the BZ SAP (Kaiser-Hill, 2002). The grid size for the "inner" lip area will be 42-foot square and the grid size for the "outer" lip area, will be 56-foot square. Revisions to the grid are expected, therefore sampling locations will not be specified at this time. The current grid locations and orientation are located on Figure 3. (Note: the 903 Pad is currently undergoing remediation and confirmation sampling, therefore, no additional samples will be collected in this area. When the boundary for the 900-11 Group is finalized and sampling locations generated, they will be located in the manner described in this SAP addendum.

As part of the 900-11 area of concern (AOC), sampling in the vicinity of the old 904 Pad will be conducted to address the 66 and 67 pCi/g locations (W-903-4) shown on the figure included in Appendix A (Rockwell, 1989). In addition to these locations, the potential exists for samples to

be collected west of the previous 904 Pad; any sampling done in this area will be collected in consultation with the regulatory agencies.

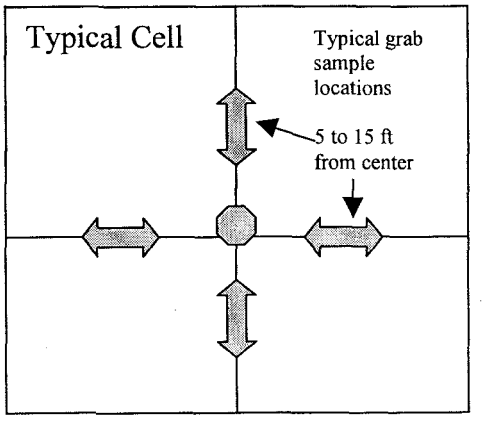
This SAP addendum comprises the "pre-screening" portion of the IHSS Group 900-11 remediation activity. A composite sampling strategy is being implemented for the area to better reflect the level of radionuclide concentrations in each grid cell. The composite sampling protocol will consist of 5 grab samples collected from the grid cell prior to excavation and composited for radiological analysis. Because the new composite sample protocol will provide multiple "grab" samples, no biased or random samples are anticipated.

The combination of previous sampling data and this sampling effort will determine whether remediation activities are required within a grid cell location. Radiological soil samples (a composite gamma spectroscopy sample for each un-excavated grid cell) will provide sufficient data to determine if the contaminant concentration exceeds action levels.

- Each grid cell will be considered a boundary for radiological characterization.
- One composite sample (for gamma spectroscopy) will be analyzed for each grid cell.
- If radionuclide concentrations are below their respective action levels (as described in the Final Buffer Zone SAP and RFCA Attachment 5, 2003 Modification), then no remediation is required.

The composite samples will be collected prior to the remedial action to document contamination levels in each grid cell that does not have previous sample and analysis data. If radiological contamination is found above the ALs in the pre-screening gamma spectroscopy, remediation is required. If the sample indicates that the soil concentration is below the AL, no further soil excavation will be required from that specific grid cell. The composite sample will be sent to the on-site laboratory for final gamma spectroscopy.

Each composite sample collected for radiological characterization will consist of five soil aliquots (grab samples) collected from the grid cell as shown below. One aliquot will be collected at the center point of the grid cell and the other four aliquots will be collected from 5 to 15 feet from the center point of the cell along the central axes of the cell. The vertical and horizontal location of the composite sample will be assigned to the center of the cell as surveyed.



3.0 REFERENCES

Rockwell International, 1989, Interim Status Closure Plan Solid Waste Management Unit 15, Rocky Flats Plant, Golden, Colorado.

DOE, 1992-2002, Historical Release Reports for the Rocky Flats Plant, Golden, Colorado.

U.S. Department of Energy (DOE), 1995. Final Phase II RFI/RI Report, 903 Pad, Mound, East Trenches Area, Operable Unit No. 2, RF/ER-95-0079.UN.

Kaiser-Hill, 1999. Final Rocky Flats Cleanup Agreement Attachment 5, Action Levels and Standards for Surface Water, Ground Water, and Soils, May 17.

DOE, 2000, Rocky Flats Environmental Technology Site Industrial Area Data Summary Report, Golden, Colorado, September.

DOE, 2001, Industrial Area Sampling and Analysis Plan, Rocky Flats Environmental Technology Site, Golden, Colorado, June.

Kaiser-Hill, 2002, Reconnaissance Level Characterization Report – 559 Closure Project, Rocky Flats Environmental Technology Site, Golden, Colorado, January.

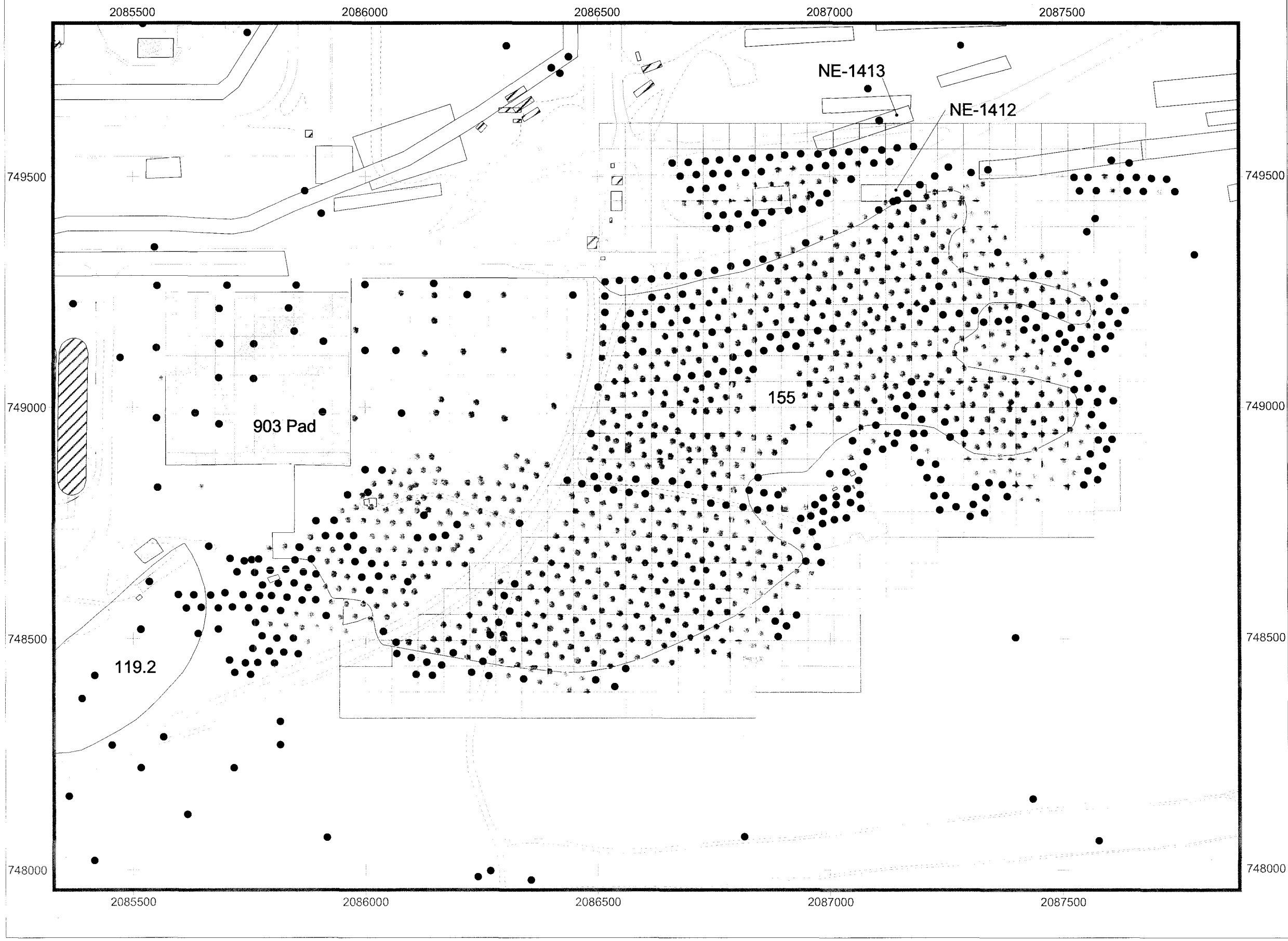
Kaiser-Hill, 2000. Characterization Report for the 903 Lip Area, 903 Lip Area, and the Americium Zone, RF/RMRS-99-427.UN, Rev. 1, June 26.

Kaiser-Hill, 2002. Final Buffer Zone Sampling and Analysis Plan, March.

DOE, CDPHE, and EPA, 2003, Proposed Modifications to the Rocky Flats Cleanup Agreement, Rocky Flats Environmental Technology Site, Golden, Colorado, April.

4.0 APPENDIX A
904 PAD INTERIM STATUS CLOSURE PLAN MAP

Figure 3
IHSS Group 900-11
Initial Grid Locations



KEY

- 56 x 56 ft Grid
- 42 x 42 ft Grid

Plutonium Results (pCi/g)

- 0 - 50
- 50 - 17400

Building

- Demolished
- Standing
- IHSS
- PAC
- Dirt road
- Paved road

N
W E
S

100 0 100 Feet

Scale = 1: 2500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

RADMS

Prepared for:

KAISER•HILL COMPANY

File: w:\projects\fy2003\903lip\903liparea.apr Date: September 2003

Figure 1
IHSS Group 900-11
Location Map

KEY

- IHSS
- PAC

Building

- Demolished
- Standing
- Paved road
- Dirt road
- Stream
- Lake
- Site Boundary

N
W E
S

800 0 800 Feet

Scale = 1:14,500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

Prepared by:

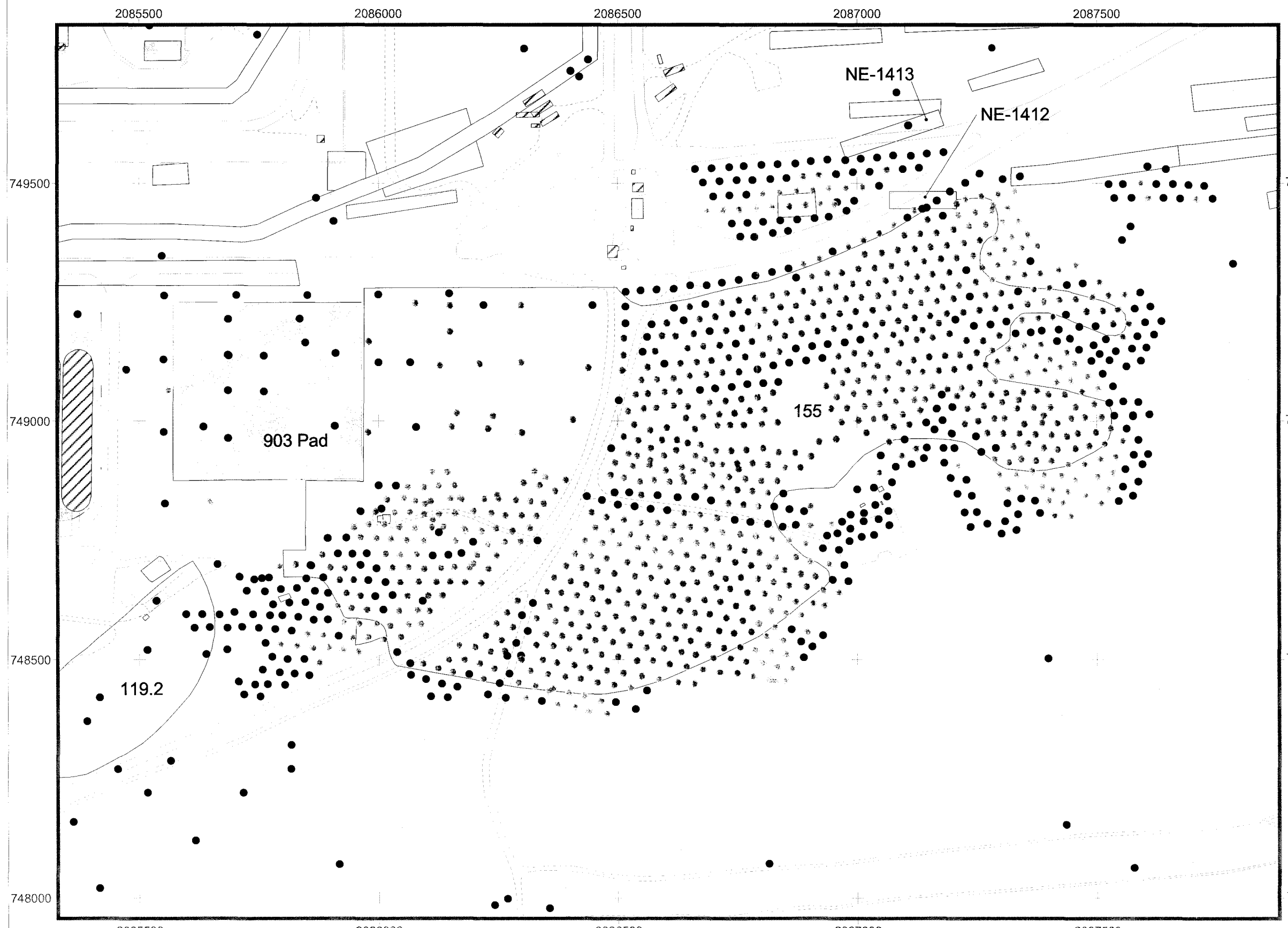
RADMS

Prepared for:

KAISER•HILL COMPANY

File: w:\projects\fy2003\903lip\903liparea.apr Date: September 2003

Figure 2
IHSS Group 900-11
Existing Plutonium-239/240
Sample Locations



KEY

Plutonium Results (pCi/g)
- 0 - 50
- 50 - 17400

Building
- *Demolished*
- Standing
- IHSS
- PAC

Dirt road

Paved road

N
W E
S

100 0 100 Feet

Scale = 1: 2500

State Plane Coordinate Projection
Colorado Central Zone
Datum: NAD 27

U.S. Department of Energy
Rocky Flats Environmental Technology Site

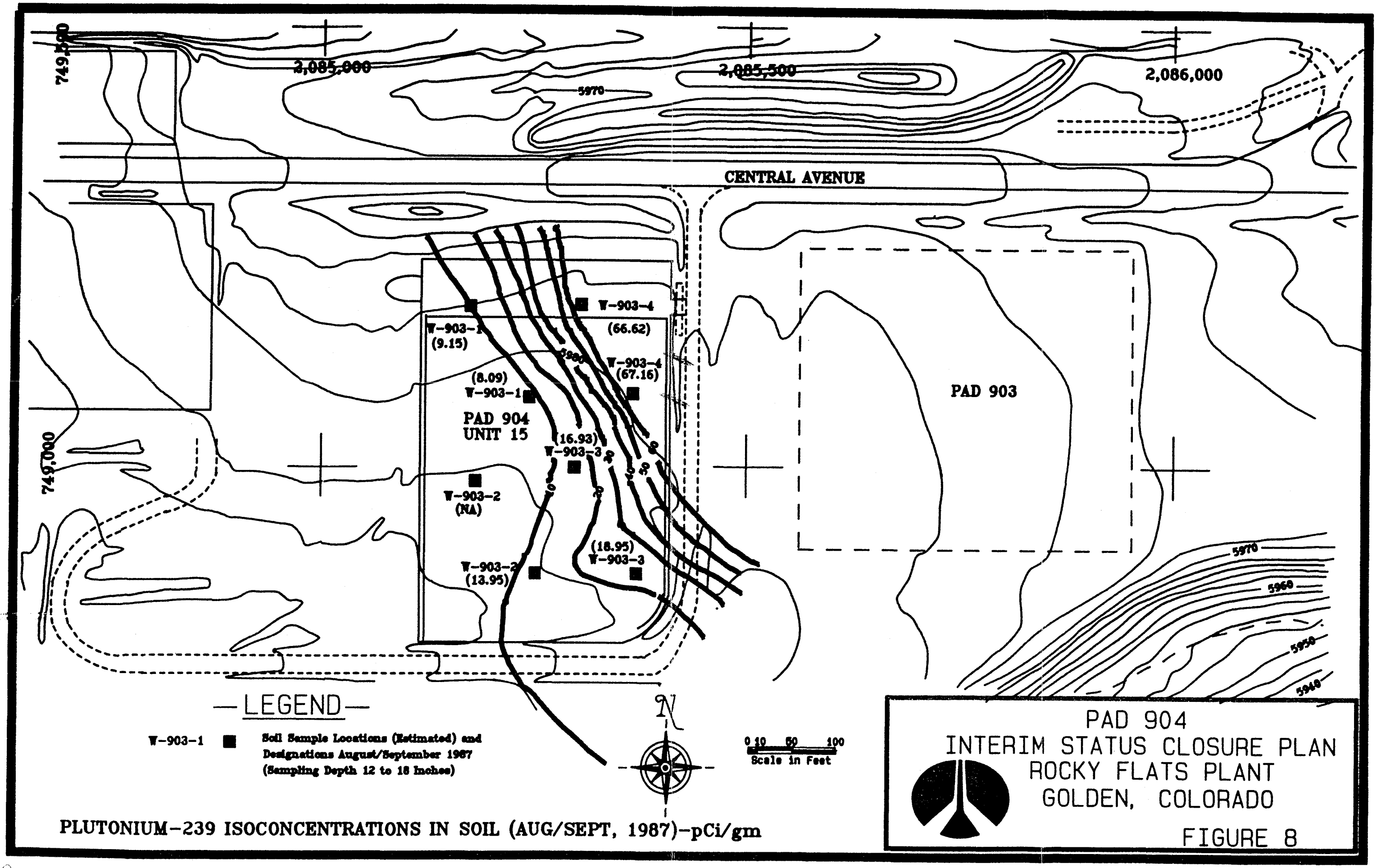
Prepared by:

RADMS

Prepared for:

KAISER•HILL COMPANY

File: w:\projects\fy2003\903lip\903liparea.apr Date: September 2003



PLUTONIUM-239 ISOCONCENTRATIONS IN SOIL (AUG/SEPT, 1987)-pCi/gm

PAD 904
INTERIM STATUS CLOSURE PLAN
ROCKY FLATS PLANT
GOLDEN, COLORADO

FIGURE 8

B/13